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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,661	07/02/2003	Jong-Hwan Lee	GP-303538	5525
7590 05/04/2005 General Motors - Legal Staff Kathryn A. Marra Mail Code 482-C23-B21 P.O. Box 300 Detroit, MI 48265-3000			EXAMINER TRAN, BINH Q	
			ART UNIT 3748	PAPER NUMBER
DATE MAILED: 05/04/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

Office Action Summary	Application No.	Applicant(s)	
	10/612,661	LEE ET AL.	
	Examiner	Art Unit	
	BINH Q. TRAN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>07/02/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the election/restriction requirement filed February 09, 2005.

This office action is in response to applicant's election without traverse on February 09, 2005. As a result of that election, the application was remained in Art Unit (AU) 3748. The Examiner in AU 3748 has chosen to examine claims 22-48 (invention II and III), since the search for such claims is substantially coextensive.

Election / Restriction

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I.* Claims *1-21*, drawn to *a method of partially oxidizing an alcohol to an aldehyde or a ketone*, classified in class *568*, subclass *401*.
- II.* Claims *22-38*, drawn to *a method of lowering NOx emissions*, classified in class *423*, subclass *239.1*.
- III.* Claims *39-48*, drawn to *a control system for NOx reduction*, classified in class *60*, subclass *303*.

Inventions I, II, and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01. In the instant case, the different inventions have different modes of operation. Specifically, claims 22-38 require the steps of combining the reducing gas with the exhaust gas upstream of the reducing catalyst ...,

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and claims 39-48 require the system of an oxidizing catalyst assembly having an inlet connected to the ethanol source and an outlet connected to the exhaust path upstream of the catalytic converter, wherein the catalytic converter holds a selective catalyst reduction catalyst, and the oxidizing catalyst assembly contains an oxidizing catalyst that catalyzes the partial oxidation of ethanol to acetaldehyde at a yield of 50% or greater.

Because these inventions are distinct for the reason given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Response To Election/Restriction

Applicant's election with traverse of the invention II is acknowledged. The traversal is on the ground(s) that the subject matter of all claims 1-48 are described as capable of use together. This is not found persuasive because the invention I, and the other inventions II and III are not

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related and doesn't describe as capable of use together. The method of partially oxidizing an alcohol to an aldehyde or a ketone can be use for any things, such as medicine.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-21 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed in paper filed on February 09, 2005.

This application contains claims 1-21 drawn to an invention nonelected with traverse in paper filed on February 09, 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP, 821.01.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claim 22 is rejected under 35 U.S.C. 102 (b) as being anticipated by Matros et al.

(Matros) (Patent Number 6,314,722).

Regarding claim 22, Matros discloses a method of lowering NO_x emissions from an internal combustion engine (e.g. See col. 3, lines 1-10) by passing exhaust gas generated by the combustion of fuel in the engine over a reducing catalyst (10), the method comprising passing a gas composition comprising an alcohol over an oxidizing catalyst to produce a reducing gas (e.g. See col. 5, lines 20-41; col. 7, lines 4-14); and combining the reducing gas with the exhaust gas upstream of the reducing catalyst, wherein the oxidizing catalyst catalyzes the partial oxidation of the alcohol to an aldehyde or ketone (e.g. See col. 5, lines 20-41; col. 7, lines 4-14).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matros in view of Nakatsuji et al. (Nakatsuji) (Patent Number 6,045,765).

Regarding claims 23-48, Matros discloses all the claimed limitation as discussed above except that the oxidizing catalyst comprises molybdenum in a +6 oxidation state supported on a carrier selected from the group consisting of alumina, silica, titania, and zirconia; and has a surface area greater than or equal to 10 m²/g.

Nakatsuji teaches that it is conventional in the art, to use the oxidizing catalyst comprises molybdenum in a +6 oxidation state supported on a carrier selected from the group consisting of

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alumina, silica, titania, and zirconia; and has a surface area greater than or equal to $10 \text{ m}^2/\text{g}$ (See col. 19, lines 46-67; col. 20, lines 1-59; Examples 1-15; col. 27, lines 7-67; col. 28, lines 1-15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to use oxidizing catalyst comprises molybdenum in a +6 oxidation state supported on a carrier selected from the group consisting of alumina, silica, titania, and zirconia; and has a surface area greater than or equal to $10 \text{ m}^2/\text{g}$ of Matros, as taught by Nakatsuji for the purpose of reducing the NO_x in the exhaust gas of an internal combustion engine; so as to reduce the poisoned materials in the purifying catalyst, and further improve the performance of the engine and the efficiency of the emission device.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Engler et al. (Pat. No. 4987112), Carter (Pat. No. 6563006), Peter-Hoblyn et al. (Pat. No. 6003303), Bagley et al. (Pat. No. 5497617), and Mohr et al. (Pat. No. 6787023) all disclose an exhaust gas purification for use with an internal combustion engine.

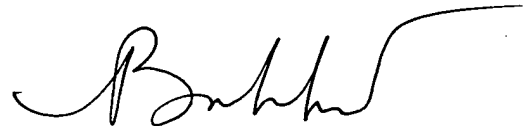
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
April 30, 2005

A handwritten signature in black ink, appearing to read 'Binh Q. Tran', with a long horizontal flourish extending to the right.

Binh Q. Tran
Patent Examiner
Art Unit 3748